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IN THIS ISSUE

Van die Redaksie : Editorial

Die Wetsontwerp op Aanvullende Gesondheidsdienste

The Supplementary Health Services Bill

Original Articles

Roentgenologic Features of the Pyloric Sphincter

Haematemesis

Malignant Jaw Tumours

New Preparations and Appliances | *Medical Films* | *Reviews of Books*

Verenigingsnuus : Association News | *Passing Events* | *Correspondence*

Support Your Own Agency Department (P. xxxi)
Ondersteun u Eie Agentskap-Afdeling (Bl. xxxi)
Professional Appointments (Pp. xxxii, xxxiii, xxxiv)

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Vol. 26, No. 8 Cape Town, 23 February 1952 Weekly 2s 6d

CONTENTS

Roentgenologic Features of the Pyloric Sphincter. *Dr. A. D. Keet, Jr.* ... 141
Van die Redaksie: *Die Wetsontwerp op Aanvullende Gesondheidsdienste* ... 144
Editorial: *The Supplementary Health Services Bill* ... 144
Haematemesis. *Mr. P. C. W. Madden, Ch.M.* ... 145
Jaw Tumours: I. Malignant Tumours. *Mr. W. Girdwood, F.R.C.S.* 148
New Preparations and Appliances: *Introdex* ... 152
Verenigingnuus : Association News. *Cape Western Branch—W.C.A. Difficulties* ... 153
Passing Events ... 153
Medical Films ... 153
Reviews of Books: *Medical Disorders During Pregnancy; Obstetrics and Gynaecology; Varicose Veins; Physiological Chemistry; The Stomach and the Duodenum; Medicine 1951; Patterns of Marriage; Alcoholism; Muir's Pathology* ... 154
Correspondence: Psycho-Somatics of Cancer (*Dr. C. Lundie*) 156

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ROENTGENOLOGIC FEATURES OF THE PYLORIC SPHINCTER

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One can support the view of Wheelon and Thomas,[1, 2] that interest in the pyloric part of the stomach is stimulated by our inability to explain, upon accepted statements, roentgenological observations made upon the human stomach. The following statements from two well-known textbooks will serve to illustrate this contention.

In Cunningham's *Textbook of Anatomy*[3] one reads that the pyloric sphincter is strongly contracted and the aperture firmly closed during the earlier stages of gastric digestion, but that it opens intermittently to allow the passage of properly digested portions of the food (p. 589); and again, that the position of the pyloric sphincter is shown (Fig. 1) by an abrupt interruption in the shadow of the barium (p. 597, referring to an accompanying roentgenogram); and that the pyloric sphincter usually relaxes with every third or fourth peristaltic wave (p. 597).

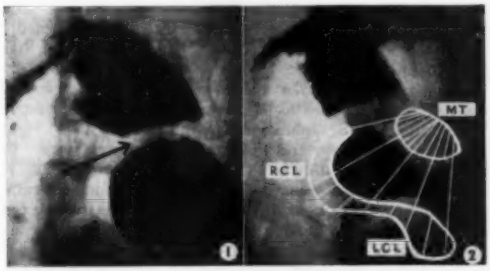

Fig. 1. The arrow points to the pyloric sphincter (according to Cunningham). According to Cole this defect is caused by the pyloric valve. The canalis is relaxed.
Fig. 2. Pyloric musculature diagrammatically superimposed on contracting canalis.
M.T. Muscle torus.
R.C.L. Right canalis loop.
L.C.L. Left canalis loop.

Samson Wright's *Applied Physiology*,[4] in a discussion of the initial gastric movements after the taking of food, states that peristaltic waves begin high up on the body of the stomach and pass rapidly towards the pylorus, which is tonically contracted at this time. 'The behaviour of the pyloric sphincter is variable. After 5-15 minutes it relaxes from time to time to permit a small amount of chyme to escape; generally such relaxation occurs when a wave of contraction involves the pyloric antrum. When the stomach has emptied to some extent, the sphincter may also relax between the peristaltic waves' (p. 754).

On the surface, these statements seem to be quite acceptable. But fluoroscopic observation of the normal human stomach, partially filled with a suspension of barium sulphate, leads one to believe that they do not reflect the true state of affairs. One gets the impression that in reality the mechanism of the pyloric part of the stomach is much more involved than postulated above. One's impression is substantiated by the evidence from other sources.

The Pyloric Valve. To begin with, Cole[5] has pointed out that the abrupt interruption in the shadow of barium is caused by the circular mucosal fold separating, during life, the lumen of the stomach from that of the duodenum, in other words, by the pyloric valve or pyloric fold (Fig. 1). It consists solely of mucous membrane, submucous tissue and muscularis mucosae. Cole *et al.*[6] later stated that the pyloric valve is closed by a circular contraction of the muscularis mucosae and that it is not controlled by any specialized sphincter derived from the circular muscle layer of the stomach. The circular fibres of the muscularis propria end at the base of the valve.

Whereas Cunningham identifies closure of the pyloric aperture with contraction of the pyloric sphincter, Cole has pointed out that closure of the aperture can be brought about by contraction of the pyloric valve.

The Pyloric Sphincter. A crucial question, of course, is: What is the pyloric sphincter? Most authors seem to agree that it is, essentially, a ring of dense, thick muscle tissue surrounding the pyloric orifice of the stomach. Cunningham defines it as an increased number of circular muscle fibres at the pylorus, which is separated from the circular muscle coat of the duodenum by a fibrous septum (p. 588). According to Gray[7] and Cunningham it is a continuation of, and according to Cole apparently a continuation of the circular muscle coat of the stomach. According to Opitz[8] it is a special muscle with a special innervation. Cunningham believes that it contains, in

addition, some muscle fibres from the longitudinal muscle coat.

The proximal portion of the first part of the duodenum is also surrounded by a circular muscle coat. This is separated from that of the stomach by a fibrous septum, as pointed out by Alvarez,[9] Cunningham, Torgersen [10-12] and other authors. Torgersen has made a very profound study of the muscular build and movements of the stomach and duodenal bulb, and it becomes necessary to refer to his work before going any deeper into the definition of the pyloric sphincter.

Cole had stated previously, on the basis of his roentgenologic observations of the stomach, that the pyloric canal is surrounded by a dense, thick, harp or fan-shaped muscle (Fig. 2). Approaching the subject from the point of view of comparative anatomy and by means of dissection, Torgersen came to an essentially similar conclusion. He found that the circular muscle coat exhibited three localized thickenings or loops in the region of the pylorus. One was situated on the lesser curvature, one surrounded the greater curvature close to the pyloric orifice and the third encompassed the greater curvature some distance orally to the pyloric orifice. These loops he called, respectively, the 'muscle torus', the 'right canalis loop' and the 'left canalis loop' (Fig. 2). Both ends of both loops are inserted into the muscle torus. Torgersen's muscular structure, consisting of the three loops together with the intervening circular musculature, corresponds to Cole's fan-shaped muscle. His terminology was adapted to the work of Forssell,[13] who had also previously established that this part of the stomach formed a functional unit, which he had termed the 'canalis egestorius'. Torgersen called his right and left canalis loops the 'double pyloric sphincter'.

Fluoroscopic observation leaves no doubt that during the earlier stages of gastric digestion, in so far as this is mimicked by the ingestion of a barium meal, the 'fan-shaped muscle', 'double pyloric sphincter' or 'canalis egestorius' is relaxed. Contraction of this muscular structure does not prevent emptying of the stomach but, on the contrary, forces the products of digestion through the pyloric orifice. Its divisions do not contract separately but act in a concerted way. When it contracts, it may do so 'in a concentric rather than a peristaltic way', as stated by Cole, thus causing the 'contraction of the canalis' of Forssell or the 'antral systole' of Golden.[14] This 'antral systole' takes place when the pyloric part of the stomach is reached by, say, every fourth or fifth peristaltic wave. It has also been referred to by Samson Wright. The actual type of movement (whether peristaltic or 'systolic') at any given time will depend on the amount of interplay between the longitudinal and circular musculature.

Further evidence that none of the muscular divisions at the pylorus is strongly contracted during rest and at the beginning of digestion is furnished by Torgersen's gastroscopic observation that the pylorus is generally open, closing when it is reached by a peristaltic wave.

And it may be pointed out that Wheelon and Thomas could not explain the prompt passage of water and neutral egg white into the duodenum on the basis of a contracted pyloric sphincter.

While speaking of a double pyloric sphincter in connexion with the gastric circular musculature, Torgersen points out that the sphincter has its duodenal counterpart, viz. the circular musculature surrounding the proximal portion of the first inch of the duodenum. This musculature, again, acts in concert with the musculature of the rest of the duodenum. He defines the pyloric sphincter, finally, as consisting of two components:—

(a) A gastric, being the right canalis loop and the muscle torus and,

(b) A duodenal, being the musculature referred to above.

If one is going to speak of a pyloric sphincter, therefore, the statement will have to be qualified, viz. it should be indicated whether the gastric or duodenal part is referred to. This becomes necessary in view of the functions of the two divisions, which have been elucidated through the work of Wheelon and Thomas.

These authors found in their work on dogs that the primary effect of a balloon in the pyloric canal is to excite it to rhythmic action. Apart from this the musculature also exhibits tone. It was seen that, at the height of a rhythmic contraction, the antrum was in a state of high tonicity and a radiograph at this time showed the pyloric canal closed (i.e. contraction of the canalis). During this stage the duodenal bulb was relaxed and its tone at its lowest ebb. Immediately afterwards during relaxation of the antrum, the tone of the duodenal bulb increased and during complete relaxation of the antrum the duodenal tone was at its zenith.

In practice, this implies that contraction of the gastric-pyloric musculature is associated with an atonic bulb, which would form a perfect receptacle for the products of digestion. During relaxation of the former, the musculature around the proximal part of the bulb gains in tone, in this way preventing any reflux into the stomach. It means that the gastric and duodenal divisions of the pyloric sphincter have opposite but complementary actions.

TERMINOLOGY

Some of the uncertainties which exist are undoubtedly due to terminological difficulties. The pyloric valve has been defined by Cole and the pyloric sphincter by Torgersen. The canalis egestorius has been shown by Forssell and Torgersen to be the same as the double gastric part of the pyloric sphincter, i.e. the muscle torus, right and left canalis loops and the intervening musculature. In its contracted state this is known as the pyloric canal. It is not always clear what is meant by the pyloric antrum. Some authors have used this as a synonym for the relaxed canalis egestorius. Golden's antral systole is the same as contraction of the canalis. The term 'antrum' is very vague, and it has been suggested by various authorities that it should be dropped. The further sub-division of the stomach is fully described by Forssell.

The Canalis. The canalis is contracted to form the pyloric canal in the following circumstances:—

1. Physiologically, during a fleeting stage of each gastric cycle, in the process of expulsion of stomach contents (Fig. 3).

2. During certain types of vomiting, as pointed out by Groedel.[15]

3. During operations on the stomach, probably due to reflex contraction from irritation (Wheelon and Thomas and Cole).

4. In the condition hypertrophy of the pyloric muscle

in adults (Fig. 4). One of the roentgenological signs in this condition is a so-called long pyloric canal (Kirklin and Harris).[16] The pyloric canal in this condition is very evident fluoroscopically, because the canalis may fail to relax and consequently the pyloric canal is seen as a permanent structure throughout the examination. We

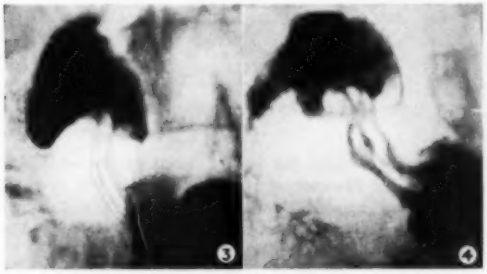

Fig. 3. Physiologic contraction of the canalis.
Fig. 4. A case of hypertrophy of the pyloric muscle in an adult.

believe that a cause of gastric retention in this condition, in which retention may occur in spite of an 'open pylorus', is due to the fact that the canalis fails to relax and contract periodically, by which mechanism a certain amount of stomach contents is normally expelled.

5. After death, due to contraction of the muscularis propria (Cole).

The pyloric canal is therefore a structure seen and felt at operation and at necropsy (Cole).

CONCLUSION

On the basis of fluoroscopic examination, the following explanation may be suggested:—

If a subject, standing behind the fluorescent screen, is instructed to swallow a few mouthfuls of barium sulphate suspension, the barium is seen to traverse the fundus and body of the stomach and its passage is arrested by the pyloric valve. The rapidity with which it reaches the pyloric part of the stomach will depend on the tone of the stomach as a whole and various other factors. It will be noticed that in some instances, even after the initial mouthful of barium and before any peristaltic waves are visible, some of it may escape into the duodenum. This is because the function of the pyloric valve is simply one of filtration (Cole). There is no strongly or tonically contracted sphincter to arrest its passage.

Filtration is not a rapid process, so, if more barium is taken, it accumulates in the stomach. The stomach exhibits a greater or lesser degree of tone, but otherwise the whole of the muscularis propria, including the canalis and the gastric part of the pyloric sphincter, is relaxed. Contraction of the musculature then occurs in the form of successive peristaltic waves which sweep towards the pylorus. After a variable number of waves the canalis as a whole contracts in its characteristic way, thereby expelling some of the contents into the atonic duodenal bulb. With the contraction at its height, the pyloric canal is formed. Immediately the bulb is filled, its tone increases. The pyloric canal relaxes. With full relaxation of the pyloric canal the tone in the bulb is at its height. Tonic contraction of the duodenal part of the pyloric sphincter prevents reflux into the stomach. After a variable interval a general contraction of the duodenal musculature takes place and its contents are expelled into the jejunum.

This total contraction of the duodenum can be compared to the contraction of the canalis: both are expelling mechanisms.

In the meantime peristaltic waves have again travelled down the stomach and, upon total relaxation of the bulb, contraction of the canalis will take place.

It is not possible to state in the present discussion which factor activates the other: whether contraction of the canalis is primary and duodenal relaxation secondary, or *vice versa*. But the possibility that lack of tone in the bulb activates the canalis and therefore influences emptying of the stomach cannot be excluded.

SUMMARY

1. Much confusion exists about the nomenclature of the different divisions of the pyloric part of the stomach.

2. Uncertainty also exists about the anatomy and action of the pyloric sphincter.

3. Evidence that the pyloric sphincter consists of duodenal and gastric counterparts can be found in anatomical, physiological and roentgenological observations.

4. The mechanism of emptying of the stomach is explained on this basis.

5. Gastric retention in hypertrophy of the pyloric muscle in adults is due, at least partially, to inability of the gastric-pyloric musculature to relax and contract fully, by which mechanism stomach contents may normally be expelled into the duodenum.

The author wishes to thank Prof. Dr. Johan Torgersen, of the University Anatomical Institute, Oslo, for his personal communication. Much of the present discussion is based on the work of Professor Torgersen.

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VAN DIE REDAKSIE

DIE WETSONTWERP OP AANVULLENDE GESONDHEIDSDIENSTE

Baie openbare belangstelling is gaande gemaak deur die aankondiging dat die Minister van Gesondheid 'n Wetsontwerp laat opstel het om die registrasie van persone wat aanvullende gesondheidsdienste voorsien, te dek. Die kategorieë wat sover in die Bylae van die voorgestelde Wet genoem word, is:—

Chiropodiste, diagnostiese radiograwe, diëetkundiges, voedselinspekteurs, gesondheidsinspekteurs, higiënebeamptes, masseurs, mediese tegnoloë, arbeidstherapeute, optometriste, ortopediese werktuigkundiges en vervaardiges van chirurgiese toestelle, ortoptici, fisioterapeute, radiograwe en spraaktherapeute.

'n Aansienlike mate van wanbegrip omtrent die doel van hierdie maatreël en die oogmerke van die mediese professie het alreeds in die gedagtes van die publiek ontstaan. Dit is op die oomblik alledaags om te vind dat daar in die leke pers alarm gemaak word, want dit word aangeneem dat persone wat besig is met die uitvoering van aanvullende gesondheidsdienste deur die Wetsontwerp vereis sal word om slegs persone wat deur 'n mediese praktisyn na hulle verwys word, te behandel. 'n Studie van die Wetsontwerp maak dit heeltemal duidelik dat daar niks verder van die waarheid is nie. Nêrens in die voorgestelde wetgewing is daar die minste suggestie dat hierdie persone nie 'n volle en onafhanklike status sal hê nie. Die wetgewing maak voorsiening vir die beheer van personeel wat tot gesondheidsdienste van hulp is en nie tot die mediese professie nie.

Die kategorieë wat in die Bylae opgeneem is, dek klaarblyklik die bedrywighede van persone wie se beroep 'n verwantskap het met ortodokse geneeskunde, maar, en dit moet nogeens benadruk word, nie noodwendig deur middel van verwysing na hulle deur ortodokse mediese praktisyns nie.

Die belange van persone wat aanvullende gesondheidsdienste voorsien, is tot 'n baie groot mate beskerm. hoewel hulle vanselfsprekend onder een of ander statutêre liggaam soos die S.A. Geneeskundige en Tandheelkundige Raad moet fungeer, is die Komitee wat die nodige magte, aan hom gedelegeer deur die Mediese Raad, uitoefen, en wat die Raad adviseer, so saamgestel dat die verkose verteenwoordigers van die betrokke persone by statuut 'n waarborg van 'n meerderheid op die toepaslike komitee het. Bowendien sal die besluite van die meerderheid van die lede op so 'n komitee beslissend wees.

Tot nog toe is dit nie moontlik om te weet wat al die voortspruitsels van die voorgestelde wetgewing mag wees nie.

Die ontwerpte maatreël is sonder twyfel in die openbare

EDITORIAL

THE SUPPLEMENTARY HEALTH SERVICES BILL

Much public interest has been aroused by the announcement that the Minister of Health has had a Bill prepared to cover the registration of persons providing supplementary health services. The categories so far mentioned in the schedule of the proposed Act are:

Chiropodists, diagnostic radiographers, dietitians, food inspectors, health inspectors, hygiene officers, masseurs, medical technologists, occupational therapists, optometrists, orthopaedic mechanicians and surgical appliance makers, orthoptists, physiotherapists, radiographers and speech therapists.

A considerable amount of misconception has already arisen in the public mind about the purpose of this measure and the aims of the medical profession. It is commonplace at present to find expressions of alarm in the lay press because it is believed that the Bill will require persons engaged in performing supplementary health services to treat only cases referred to them by a medical practitioner. A study of the Bill makes it quite clear that nothing can be further from the truth. Nowhere in the proposed legislation is there the slightest suggestion that these persons will not have a full and independent status. The legislation provides for the control of personnel auxiliary to health services and not to the medical profession.

The categories listed in the schedule clearly cover activities of persons whose calling is related to the practice of orthodox medicine but, it must be emphasized once again, not necessarily through reference by orthodox medical practitioners.

The interests of persons providing supplementary health services have been protected to a very considerable extent. Although they must obviously function under the control of some statutory body such as the S.A. Medical and Dental Council, the Committees exercising the necessary powers delegated by the Medical Council, and advising it, are so constituted that the elected representatives of the persons concerned are guaranteed by statute a majority on the appropriate committee. Moreover, decisions will be constituted by a majority of the members on such a Committee.

It is as yet not possible to know what all the ramifications of the proposed legislation may be.

The projected measure is undoubtedly in the public interest in that it guarantees a certain minimum standard of qualification for persons providing those services

belang, aangesien dit 'n sekere minimum standaard van kwalifikasie waarborg ten opsigte van die persone wat dienste verrig soos in die Bylae vermeld. Dit is, derhalwe, 'n stap in die regte rigting tot die uitskakeling van kwaksalwery. Die magte wat deur die Wet toegeken word is egter uiters wyd en in sekere opsigte onbeperk. Die Goewerneur-generaal kan, bv. (weliswaar op aanbeveling van die S.A. Geneeskundige en Tandheelkundige Raad) by proklamasie ‚enige kategorie van persone wat aanvullende gesondheidsdienste verrig' insluit; en die Minister kan ‚wanneer hy dit ook al nodig ag . . . die omvang van die beroep van enige kategorie van persone wat aanvullende gesondheidsdienste verrig, omskryf'. Vir hierdie doel word dit nie noodwendig van die Minister vereis om op advies van die S.A. Geneeskundige en Tandheelkundige Raad op te tree nie, hoewel dit van hom vereis word om die Mediese Raad te raadpleeg wanneer hy *regulasies* uitvaardig betreffende enige aangeleentheid nodig om die oogmerke van die Wet te verwesenlik.

Om te regeer by regulasie is 'n beginsel wat onder baie Suid-Afrikaners nie geredelik aanvaar word nie. Met die oog op die heel besondere probleme wat eie is aan een van die kategorieë in die Bylae, nl. optometriste, sal die mediese professie baie meer inligting en baie groter waarborge, in die openbare sowel as professionele belang, wil hê, voordat dit sy onvoorwaardelike steun aan sommige kenmerke van hierdie wetgewing kan toesê.

Die maatreël is so kontensieus dat die Minister die Wetsontwerp na 'n Gekose Komitee verwys het. Dit is 'n wyse stap en behoort alle belanghebbende partye afdoende geleentheid te bied om vertoë te rig, wat die aanname van 'n maatreël wat die ondersteuning van almal wat deur hierdie belangrike wetgewing geraak word, sal verseker.

covered by the categories in the schedule to the proposed Act. It is, therefore, a step in the right direction towards the elimination of quackery. The powers provided by the Bill, however, are extremely wide and in certain respects unlimited. The Governor-General, e.g. (admittedly on the recommendation of the S.A. Medical and Dental Council) may by proclamation include 'any class of persons engaged in the performance of supplementary health services'; and the Minister may 'whenever he deems it necessary . . . define the scope of the calling of any class of persons engaged in the performance of supplementary health services'. For this purpose the Minister is not necessarily required to act on the advice of the S.A. Medical and Dental Council, although he is required to consult the Medical Council when making *regulations* concerning any matter necessary to achieve the objects of the Act.

Rule by regulation is a principle which does not find ready acceptance amongst many South Africans. In view of the very special problems associated with one of the scheduled categories, viz. optometrists, the medical profession will require much more information and many more safeguards, in the public as well as in the professional interest, before it can give its unqualified support to certain features of this legislation.

The measure promises to be so contentious that the Minister has referred the Bill to a Select Committee. This is a wise step and it should give all interested parties an adequate opportunity to make representations which will ensure the passage of a measure which will enjoy the support of all those affected by this important legislation.

HAEMATEMESIS

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The constant flow of articles on this subject indicates its complexity and the degree of dissatisfaction with its treatment.

During the course of the last 10 years, a division of cases has been made into groups under and over 50 years of age—(1) pre-arteriosclerotic and (2) arteriosclerotic. This has gained wide acceptance as a basic consideration preceding treatment. The prognosis of gastro-intestinal haemorrhage in these two groups is very different, in that primary arrest is more likely in (1) than in (2). For this reason surgical intervention recommends itself more readily in (2) than in (1). This pertains especially, but not exclusively, to haemorrhage from ulcer.

Cases with relatively small haemorrhage presenting with isolated haematemesis or melaena, or both, but without serious constitutional upset, may present an interesting diagnostic problem; but these cases do not call for urgent therapy, without which a fatality may ensue. There a leisurely approach with complete investigation will usually yield an accurate diagnosis permitting of elective treatment. It is cases which present as urgent emergencies which constitute the real problem. Here the loss of a few hours before carrying out active treatment will often mean the difference between life and death; early and prompt decision is vital.

The vast majority of such cases present briefly as follows: A healthy man of 40 wakes with mild epigastric discomfort and nausea. He goes to the bathroom, vomits and faints and is found there a little later, collapsed and probably in a pool of blood. The general practitioner on arrival finds the patient in bed, pale, cold and sweating, with pulse ±100 per minute and blood pressure 80/50 mm. Hg. He sends the patient into hospital after giving him morphine gr. ¼. On admission his condition is much as

above, possibly the blood pressure has improved to 100/60 mm. Hg and the haemoglobin is found to be about 9 gm. per 100 c.c. Half-an-hour later the patient vomits another kidney dishful (½ pint) of mixed, fresh and old blood.

The problem which arises is: has bleeding now ceased?

1. If it has ceased, then the treatment is conservative;

2. If not and bleeding is progressive, is the treatment to be conservative or is operative intervention indicated?

It would perhaps not be out of place to list the more frequent causes of gastro-intestinal bleeding, viz.:—

1. Peptic ulcer.
2. Cirrhosis of the liver and varices.
3. Neoplasm of the stomach, benign and malignant.
4. Acute erosions of toxic origin.
5. Blood dyscrasias.

Group 1 forms at least 70% of cases; but Groups 2, 4 and 5 can usually be excluded by the history and by the physical stigmata, associated with cirrhosis and portal hypertension. With the differential diagnosis different therapeutic problems arise.

Assuming that the probable diagnosis lies between peptic ulcer and neoplasm, what means have we of deciding whether haemorrhage has stopped or is progressing? We must consider the classical evidence of internal haemorrhage—pallor, sweating, collapse and, if more accurate signs are sought, then perhaps the pulse, blood pressure, haemoglobin and packed-cell volume will be considered to provide more reliable guides. To these some would add the blood urea level. If these various readings remain static or if the blood pressure rises somewhat and the pulse drops accordingly, it is probable that bleeding has ceased. Most people with experience, however, will recollect having been lulled into just this sense of security, only to have the patient suddenly become nauseous and vomit up a further two pints with further collapse. This type of episode occurs too often to be brushed aside as unlikely and improbable.

Is it not a fact that the various indications of blood loss, which we have mentioned, are only partly accurate? They are affected by many variable factors and, at best, often make themselves apparent only when the haemorrhage has continued (or possibly recommenced and continued) for a considerable time. As has been remarked earlier, the time factor here may be the deciding factor between successful treatment and failure.

Have we no other means of determining at an earlier stage and perhaps with more accuracy, whether the haemorrhage is progressive? One ventures to suggest that the simple expedient of passing a duodenal tube and employing either continuous or intermittent suction, has much to recommend it. The possible trauma resultant therefrom is negligible and the information gained may be very valuable.

Should the ulceration be gastric, then the material aspirated will contain fresh blood directly the haemorrhage commences. The quantity and proportion of fresh blood in the aspirated material will indicate the rate of blood loss. Both these points are of vital importance. Should the bleeding from a gastric ulcer have ceased, as indicated by the quality of the aspirated material, the ordinary modified Meulengracht feeding scheme can be instituted and maintained with the tube *in situ*, and the intermittent withdrawal of specimens, at intervals of an hour or so, will indicate accurately the satisfactory intra-gastric state.

Where the site of ulceration is duodenal, the information yielded is not so promptly accurate and helpful. Here one would suggest that it is justifiable and even advisable to enlist the aid of the radiologist, to endeavour to guide the tube into the duodenum. Once there, it will provide the same accurate guide as it does in the case of the stomach.

A number of variable factors exercise an influence on the decision whether operation is indicated for gastro-intestinal haemorrhage. Even the most conservative will admit that *profuse* and *continuous* haemorrhage will demand operative interference to save life. There is no other known method which will enable one to decide more quickly and more accurately whether the blood loss is profuse and whether it is continuous, than the use of the duodenal tube.

It is generally accepted that with severe haemorrhage there is an accumulation of nitrogenous material in the blood which is revealed as a rise in blood urea. Clinically a deterioration in the bleeding patient's condition tends to run parallel with a rise in blood urea. This rise in blood urea is attributable to impaired renal function as a result of poor circulation in the kidney. In addition, however, when the blood is lost into the gastro-intestinal tract, this makes available easily digestible and rapidly absorbable nitrogenous material, raising the blood urea level even further and throwing even further strain on the kidney. The extent of the added damage due to blood ingestion has been confirmed experimentally. The question of a toxic factor from blood digestion remains problematical.

The photomicrographs (Figs. 1-7) show some of the changes found *post-mortem* in the kidneys of people dead of haematemesis and also what appear to be similar changes in the kidneys of rabbits in whom a comparable condition was produced experimentally.

Fig. 1 shows a section of the kidney of a normal rabbit. Note normal tissue spaces and relative size of glomeruli and collecting tubules—for comparison with later pictures.

Fig. 2 is a section of the kidney of an animal in which severe haemorrhage had been produced. Note increased cellularity of glomeruli, swelling of tubules, obliteration of tissue spaces, but relatively little degenerative change.

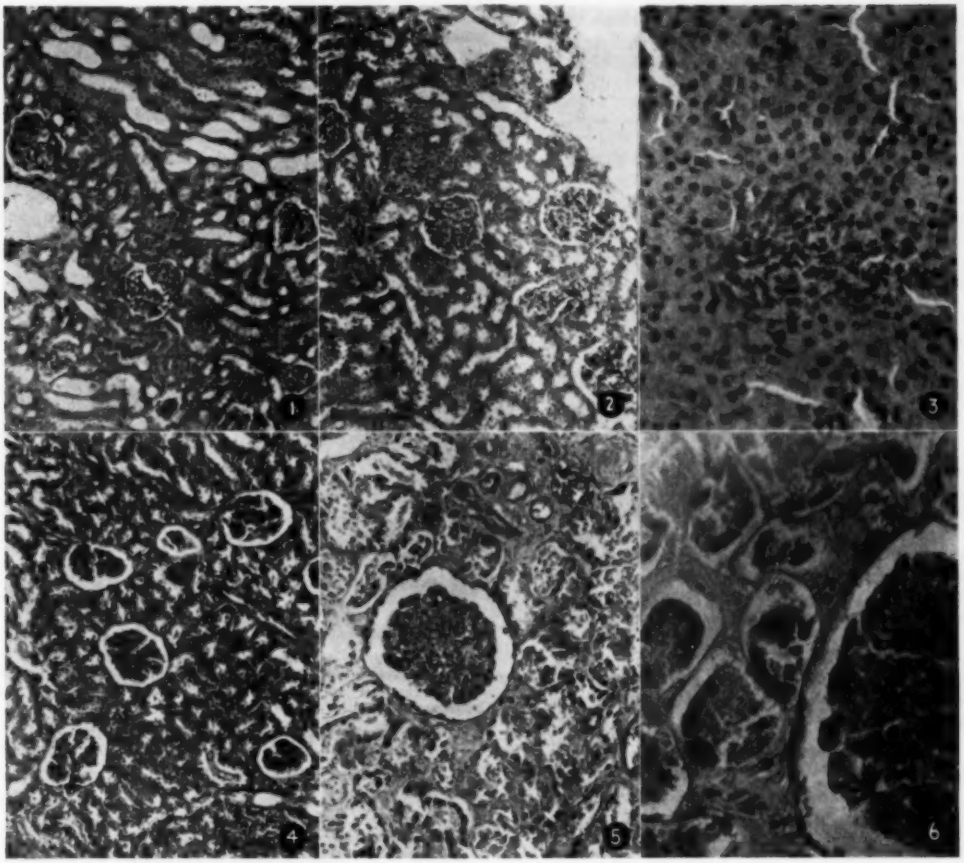
Fig. 3 is a section of the kidney of an animal from which a considerable quantity of blood had been taken and this blood introduced into the stomach via a tube. Note extreme swelling of tubules obliterating tissue spaces and lumen of tubules and making it difficult to recognize glomerulus as separate entity.

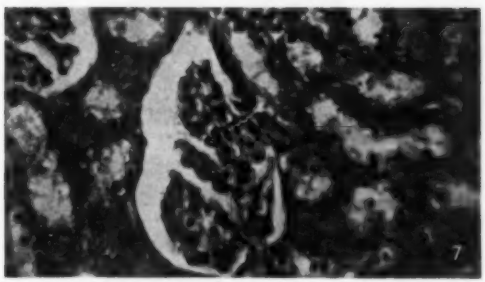
Fig. 4 is a section of the kidney of an animal under conditions similar to those in Fig. 3. Note here marked swelling of tubular epithelium with degenerative changes.

Fig. 5 is a section of the kidney of a patient dead after severe haematemesis. For comparison with previous section (Fig. 4). Note again swelling and marked degeneration in proximal tubules.

Fig. 6 is the high-power view of proximal tubules of an animal in a state similar to that in Fig. 4.

Fig. 7 is the high-power view of the proximal tubules of a man dead of haematemesis. For comparison with Fig. 6. The similarity of the degenerative changes is well shown.





CONCLUSION

From the facts presented above, it would seem reasonable to try to prevent the ingestion and absorption of blood in cases of gastro-intestinal haemorrhage, and so to throw less strain on the already impaired kidney mechanism. For this reason the use of continuous suction on the duodenal tube commends itself where there is found to be a continuous loss of blood, and if the loss does not appear to be profuse enough to warrant operation. Where operation is decided upon, the same procedure should be regarded as an essential part of the pre-operative preparation.

In a case where there was bleeding from a known gastric ulcer and where the patient's condition on admission was poor and uraemic, it has been possible, by the use of conservative treatment with continuous suction, intravenous saline and blood transfusion, to reduce the blood urea from 308 mg. per 100 c.c. to 63 mg. per 100 c.c. over a period of five days. During these five days fresh blood was aspirated continuously from the stomach, indicating

continuous bleeding. This was then stopped at operation, carried out in at least a measure of safety which was quite absent when the patient was first admitted.

In view of what has been said and in view of one's own salutary experience with the use of the duodenal tube and suction with gastro-intestinal haemorrhage, it is difficult to understand the antipathy exhibited by some, notably physicians, to this aid in diagnosis and treatment. It is hoped that the arguments outlined will lead to the adoption of a method which will give a clear and more accurate assessment of the degree and progress of haemorrhage. This in turn will add more certainty to the method of treatment and will save more lives. The use of suction combined with blood transfusion and intravenous saline will make it possible to observe the patient and assess the bleeding directly, while maintaining his condition, and not by waiting for the clinical evidences of a deterioration in his condition, which may be regarded almost as the late evidences of haemorrhage. It is extraordinary that, whilst our immediate treatment for haemorrhage in any other situation is to use every mechanical means at our disposal to stop it, the treatment of gastro-intestinal bleeding is governed by the maxim 'wait and see', with the frequent result that, because we can see too little and too inaccurately, we wait too long. It seems completely illogical.

JAW TUMOURS*

I. MALIGNANT TUMOURS

W. GIRDWOOD, CH.M., F.R.C.S., F.R.C.S.E.

Johannesburg

Jaw tumours are of particular interest in South Africa where these are common amongst the Bantu.

Classification of jaw tumours is of interest because of the wide variety of pathological conditions which can arise from bone, soft tissue and dental tissue. For the purpose of completeness, a detailed classification is important.

Benign tumours and cysts (excluding adamantinoma) will be considered in Part II and Part III will be devoted to adamantinoma.

Many classifications have been given in the past, e.g. Thoma,[20, 21] Woldron,[23] and the following may serve a useful purpose:

I. MALIGNANT TUMOURS

1. *Arising from Bone.*
   - (*a*) *Primary*
     - i. Osteogenic sarcoma (including chondrosarcoma)
     - ii. Fibrosarcoma (periosteal)
     - iii. Rarities: Ewing's tumour; Multiple myelomatosis; Reticulum cell sarcoma; Plasmacytoma; Liposarcoma; Xanthosarcoma; Malignant giant cell tumours; Kaposi's sarcoma; Central fibrosarcoma; Haemangio-endothelioma.
   - (*b*) *Secondary*
     - i. Haematogenous: Carcinoma (Breast; Prostate; Thyroid; Ovary; Lung; Hypernephroma); Testicular tumours (Teratoma; Seminoma); Sarcoma
     - ii. Local spread to bone from neighbouring tissues.
2. *Arising from Soft Tissues*: Carcinoma of the antrum; Rodent ulcer of the skin; Carcinoma of the oral cavity; Carcinoma of the nasal cavity; Carcinoma of the conjunctiva and retina; Malignant parotid and aberrant salivary tissue; Malignant disease of neck, lymph glands, etc.
3. *Arising from Dental Tissues.*

Thoma[21] gives a classification of odontogenic tumours of the jaws showing the pathological possibilities of these tumours with regard to malignancy. This is as follows, with the malignant tumours indicated in italics:—

ECTODERMAL ORIGIN

1. Follicular Cyst.
2. Adamantoblastoma: (*a*) Masses of cells; (*b*) Cords and buds; (*c*) Follicles; (*d*) Follicles and cysts.
3. Adeno-adamantoblastoma.
4. Melano-adamantoblastoma.
5. *Malignant Adamantoblastoma.*

MESENCHYMAL ORIGIN

1. Odontogenic myxoma.
2. Odontogenic Fibroma: (*a*) Cementoblastoma; (*b*) Dentinoma.
3. *Odontogenic Fibrosarcoma.*

MIXED ODONTOGENIC TUMOURS

1. Adamantinofibroma.
2. Adamantino-odontoma.
3. Odontoma: (*a*) Germinated; (*b*) Compound; (*c*) Complex.
4. *Adamantinosarcoma.*

II. BENIGN TUMOURS

1. ARISING FROM BONE

i. Fibro-osseous group of tumours: (*a*) Osteoma; (*b*) Osteofibroma; (*c*) Hyperostosis; (*d*) Osteoid osteoma; (*e*) Fibroma.

* The References will be published at the end of the concluding part of this series.

ii. Osteoclastoma (giant cell tumour).
iii. Haemangioma.
iv. Rarities (myxoma, chondroma, etc.).

2. ARISING FROM SOFT TISSUES

i. Mixed salivary tumour of the palate.
ii. Fibrous epulis.
iii. Haemangioma.

3. ARISING FROM DENTAL TISSUES

This will include all the non-malignant odontogenic tumours as indicated in Thomas' classification. From the practical point of view this classification can be used.

i. Dental cysts
  (a) Dental root cyst (radicular cyst).
  (b) Dentigenous cyst (follicular cyst).
  (c)
    Incisive canal cysts.
    Traumatic.
    Cysts of eruption.
ii. Odontomes (with masses of calcified tissue or conglomerate teeth or dental enamel, etc.).
iii. Adamantinoma (ameloblastoma, adamantino-epithelioma, multiocular cysts, etc.).

From the practical point of view the clinical approach may well be divided into:

I. THE PROBLEM OF UPPER JAW TUMOURS

Diagnosis is difficult because of the multiplicity of conditions occurring here and the differentiation usually falls into the following groups:

A. BENIGN UPPER JAW TUMOURS (SOLID OR CYSTIC)

1. *Fibro-osseous group of tumours:* osteofibroma, osteoma, hyperostosis, torus palatinus, etc.
2. *Benign giant cell tumours*
  (a) Osteoclastoma.
  (b) Peripheral (myeloid epulis).
  (c) Central (cystic giant cell tumours: solid giant cell tumours).
3. *Fibrous epulis: fibroma or angiofibromatous epulis* (myeloid epulis and fibrosarcomatous epulis).
4. *Mixed salivary tumour of the palate* (usually solid and may simulate carcinoma, occasionally cystic and 'floppy').
5. *Adamantinoma of the upper jaw* (usually solid and behaves like a carcinoma.)
6. *Haemangioma.*
7. *Cysts of dental origin.*

B. MALIGNANT UPPER JAW TUMOURS [14, 16]

1. *Carcinoma:*
  (a) Squamous epithelioma of the maxillary antrum; nose, other sinuses, naso-pharynx (including lympho-epithelioma).
  (b) Adenocarcinoma.
2. *Sarcoma (osteogenic), fibrosarcoma,* etc. (including plasmacytoma).
3. *Adamantinoma* (classified in the case of the upper jaw as malignant).
4. *Skin carcinoma and rodent ulcers.*
5. *Tumours spreading to the jaw from neighbouring tissue,* (parotid and submandibular glands and carotid body, etc.).

II. THE PROBLEM OF LOWER JAW TUMOURS

These are usually benign and may be cystic or solid:[13]

A. CYSTIC TUMOURS [24]

(These are shown by apparently cystic appearance on X-ray).

1. *Dental cysts* (dental root and dentigenous cysts).
2. *Adamantinoma*
  i. Peripheral alveolar type (treated by 'biopsy excision').
  ii. Central adamantinoma with thinning of mandible to a rim (treated according to age and health; ideally by excision and bone graft. The problem is whether to save the rim or not).
  iii. Symphyseal adamantinoma (choice of surgery is complicated by the danger to life due to lack of support to the tongue).
  iv. Adamantinoma of the ascending ramus. (Partial resection of mandible is necessary).
  v. Massive adamantinoma. (Technical difficulties of exposure exist and possibility of malignancy is present).
  vi. Cystic lesions, simulating dentigenous cysts or dental root cysts. (Diagnosis is difficult). [15]
3. *Rarities*
  (a) Osteoclastoma.
  (b) Central fibrosarcoma and malignant primary and secondary growths.
  (c) Osteitis fibrosa.
  (d) Neurofibroma, hydatid disease, lipoidosis, leukaemia, etc.

These may appear cystic on X-ray but may be solid on exposure.

B. SOLID TUMOURS

1. *Fibro-osseous group of tumours:*
i. *Osteoma* (the compact osteoma at the angle of the mandible is easily diagnosed).
ii. *Osteoma of the ascending ramus* may present as a gradually enlarging mandible on the one side with increasing deformity and occlusive defects.
iii. *Fibro-osseous disease of the mandible* may present as a tumour, osteoma or fibroma and sometimes on X-ray may appear as a cyst-like structure, or osteitis fibrosa cystica, associated with a parathyroid tumour, or Albright's disease of fibrous dysplasia, or Paget's disease must be considered.
2. *Odontomes as solid fibrous or conglomerate masses of dentine calcium, teeth and enamel.* Adamantinoma in the lower jaw is usually cystic on X-ray.

MALIGNANT JAW TUMOURS

Examples of these tumours are shown in Figs. 1 and 2.

Osteogenic Sarcoma. This tumour (Fig. 3) is extremely malignant. The X-ray criteria for the diagnosis of these tumours in long bones apply also in the case of the jaw.[6]

New bone laid down outside the line of the cortex may assume the form of palisade spicules, small bush appearance, or may be bizarre in nature. A soft tissue shadow, Codman's angle and erosion with osteolysis or osteosclerosis may be present either as solitary features or combined in one form or another.

Radiotherapy is ineffective and radical excision, when the diagnosis is early, gives a meagre chance of successful treatment.

Fibrosarcoma. This tumour may be:

1. Peripheral.
2. Alveolar (fibrosarcomatous epulis).
3. Central.

1. *The peripheral or periosteal fibrosarcoma,* if well differentiated, can be treated by radical resection of the jaw. Figs. 4-6 show a young patient before and after excision of the right side of the mandible. In Fig. 6, the nature of the incision can be seen. It is unusual in that it extends from the angle of the mouth on the right side over the tumour laterally. It is of interest that facial expression is maintained, apparently due to a retention of the cervical branch of the facial nerve to the triangularis muscle of the lower lip and the continued activity of the buccinator muscle. This incision is very useful in massive tumours both of the mandible and the maxilla. The child shown is still alive and well 8 years after treatment.

Fig. 7 illustrates the gross specimen of a fibrosarcoma. Anaplastic growths give a poor prognosis (Fig. 8, fibromyxosarcoma).

Fig. 1. Osteogenic sarcoma of the maxilla.
Fig. 2. Osteogenic sarcoma of the left maxilla.
Fig. 3. 'Sun-ray' spicules. Osteogenic sarcoma of the maxilla (cf. long bones).

2. *The alveolar or fibrosarcomatous epulis* has the appearance similar to a fibrous epulis but with extension to the neighbouring alveolar bone and not limited in extent, as in the fibrous epulis. It also has some similarity to the myeloid epulis as it may be plum-coloured with expansion of alveolar bone but the nodular or papilliferous surface appearance is against this.

3. *The central fibrosarcoma*, like all central malignant tumours of long bones, occurring in the mandible, may show irregular mottled moth-eaten erosion and may appear like a cyst with expansion of the bone. Bursting through the overlying cortex may show layers of new bone, or a 'burst out', of a bizarre nature. A central 'cyst-like' area of erosion of this nature may be due to a neurofibroma with or without malignant change. Such conditions as secondary carcinomatous deposits, central fibroma, fibrous osteitis associated with parathyroid tumour or not, giant cell tumour, or polyostotic fibrous dysplasia (Albright) and lipoidosis must be considered.

Fibrosarcoma of the Mandible: Case Report. Isaac Dhlamini, a Zulu male aged 2 years, was admitted with a history of swelling of the jaw for the last 10 months. It had not caused pain.

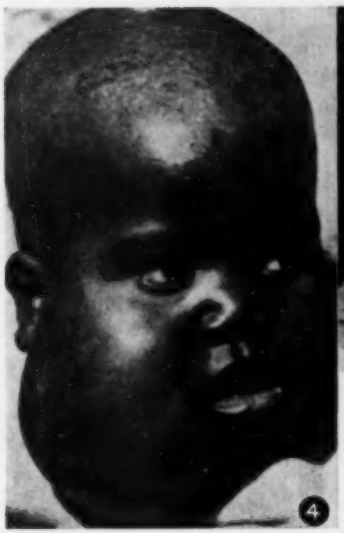
There was considerable swelling of the child's jaw on the right side. The swelling was hard and indistinguishable from the mandible; it was not hot, cystic or tender. The swelling occupied the whole of the right half of the mandible. The teeth were all present and normal for the age of the child. There was a swelling extending into the mouth as well as onto the cheek.

X-ray showed a slight elevation of the periosteum in the neighbourhood of the growth but no evidence of erosion of bone. A pre-operative diagnosis of an extensive 'sarcoma' of the mandible was made and it was thought 'doubtful' from the point of view of possibility of effective treatment. There were no enlarged cervical glands or evidence, on X-ray, of involvement of the lungs. However, a biopsy was done to determine what pathology was present and the report said: 'This specimen shows the presence of a fibrosarcoma of low-grade type.'

On the basis of this report and the fact that on clinical grounds the tumour appeared to be localized to regions still removable, it was decided to operate.

If the right half of the mandible was to be removed one had to allow for certain deformities. There would be a falling in of the right side of the face. The jaw would open to the right side and not return to normal occlusion. With this in view cap splints were prepared on the upper and the lower teeth on the left side, with screw holes for a continuation bar from the left lower teeth to the right side and hooks on upper and lower teeth for immobilizing if necessary. Also a training flange was fixed to the left lower, extending past the left upper teeth so that on opening the mouth swing over to the right side could be prevented.

At operation the usual technique was used, i.e. blood transfusion, infra-oral incision and extension of the incision along



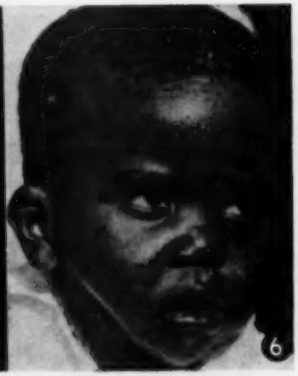


Fig. 4. Fibro-sarcoma of the mandible.
Fig. 5. After excision of the right half of the mandible.
Fig. 6. After excision of the right half of the mandible.

the mandible with intra- and extra-oral exposure. In this case mucosa could be mobilized so that primary suture could be done without skin grafting, pressure was effected in the area of the wound by means of an intra-oral bun of gutta-percha over the prolongation bar. The facial features were maintained by means of this bun.

The tumour mass was excised *in toto*. The false capsule was left attached to the tumour and the area of skin where the biopsy was done was also left attached to the tumour.

The post-operative course was uneventful with only a slight rise in temperature for 5 days. There was no clinical shock and the stitches were removed on the ninth day. A slight opening up of the wound at the side of the mouth did not cause later trouble as it healed by granulation and the end result was not unpleasant. No further trimming was done.

The operation was done on 16 June 1944; to date the patient has shown no evidence of recurrence.

Occlusion and Bite. The cap splints were worn until they loosened in about 7–8 months and from then onwards no further training flange was used. The patient now has a slight swing over, but the teeth return to their normal position and the child has grown considerably and has not shown any difficulty in taking his meals.

Facial configuration. In front and ¾-view there is very little deformity to be seen. On full lateral view it is noticeable that there is a depression where the mandible should be. It was considered that a later assessment should be made after the period of likely recurrence of the growth and when growth was more likely to be a factor in distorting one's plastic efforts. Thus, when the patient is about 16–21 years of age, bone grafting and excision of the scar will be considered. It is just possible that at an earlier age dentures can be fitted with prolongation onto the right side and by means of judicial filling out of this, a very satisfactory result may be obtained.

Rarities (*Vide* 1(a)iii). Under this heading the list given in the classification must be considered.

Plasmacytoma occurs rarely in the naso-pharynx, nose or other facial bones or conjunctiva. It behaves peculiarly as it may be localized to the naso-pharynx with local destruction and cases are recorded where no recurrence occurred after local curettage.

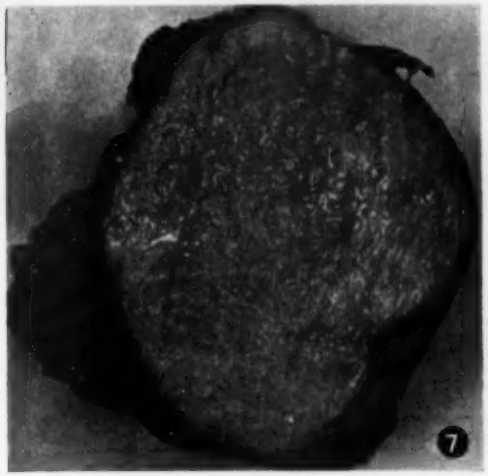


Fig. 7. Gross specimen. Fibrosarcoma.

SOFT TISSUE MALIGNANT TUMOURS

Carcinoma of the Antrum. This may be a squamous carcinoma (Fig. 9), or adenocarcinoma, and differentiated or anaplastic types including transitional types, and lympho-epithelioma.

Criteria of Inoperability. When there are the following features one is dealing with a hopeless proposition:—

1. Peau d'orange of the face (facial oedema) (Fig. 9).

Fig. 8. Fibro-myxo-sarcoma.

Fig. 9. Squamous carcinoma of the right antrum.

2. Anaplastic carcinoma.

3. Extension of carcinoma to the base of the skull. A useful line for this determination is a line from the lateral angle of the eye to the angle of the mandible—Ohngren's line. Clinically, swelling above or at the level of the zygomatic arch means extension into the infratemporal fossa and this usually means extension to the base of the skull.

4. Extension to the soft palate. When this has happened, lymphatic spread has usually taken place plus considerable extension to the base of the skull.

Peculiarities of carcinoma of the antrum. (1) Extension to lymph glands is unusual except in late and anaplastic cases.

(2) In the late stages, the site of origin is often impossible to determine and extensions of growths deep to the mandible and then into the infratemporal region and maxilla may occur from neck tumours, e.g. carotid body tumours, lymphosarcoma, reticular cell sarcoma.

(3) Ulceration of the tumours into the mouth is common, with discharge and sepsis.

(To be concluded)

NEW PREPARATIONS AND APPLIANCES

INTRADEX

Description. Intradex is a 6% solution of degraded and fractionated Dextran in normal saline which is supplied in 1 pint bottles. Each batch undergoes a series of 16 physical, chemical and biological tests to ensure uniformity of composition and freedom from reactions.

Intradex can be stored indefinitely under all climatic conditions and it is, of course, sterile and universally compatible.

Indications for Use. The colloid osmotic pressure of Intradex is similar to that of plasma; this property makes it eminently suitable for the treatment of shock. It has been conclusively shown that Intradex will raise and maintain the blood pressure and the circulating blood volume with a resulting increased cardiac output and raised venous pressure. In this way it can replace plasma and even whole blood, as a temporary measure, in the treatment of shock due to various causes.

Intradex has proved most successful in the treatment of traumatic shock and burns. In the former, if there has been considerable blood loss, whole blood is indicated; but when compatible whole blood is not immediately available an infusion of Intradex can be a life-saving measure. In non-haemorrhagic traumatic shock and in burns the results obtained with Intradex are those which can be expected of plasma. Good results have also been obtained in the treatment of antepartum and postpartum haemorrhage.

Before giving an infusion it is advisable to obtain an ample

sample of blood, because Dextran can cause 'rouleaux formation' which can interfere with cross-matching tests. In the event of a bottle being only partially used the unexpended portion should be discarded.

Intradex is the brand of Dextran which is made in South Africa by African Dextran, Ltd., of Johannesburg, to the specification of the S.A. Bureau of Standards, and distributed throughout the Union by The Crookes Laboratories Ltd., London.

South African Address: P.O. Box 1573, Johannesburg.

VERENIGINGSNUUS : ASSOCIATION NEWS

CAPE WESTERN BRANCH

WORKMEN'S COMPENSATION ACT DIFFICULTIES

At a recent Branch Council meeting it was decided that an opportunity be afforded to members of the Branch who have grievances against, or difficulties with, the administration of the Workmen's Compensation Act of raising these questions at a General Meeting should sufficient queries be received. It was further decided that, if any members wished to raise points, they be requested to forward these *in writing* to the Honorary Secretary of the Branch so that a General Meeting may be convened.

PASSING EVENTS

Professor Norman Capon, Professor of Child Health at the University of Liverpool, addressed a combined meeting of the Cape Town Post-Graduate Medical Association and the Paediatric Section of the Medical Association of South Africa at the invitation of the University of Cape Town, on 8 January 1952. The Principal of the University of Cape Town, Dr. T. B. Davie, was in the Chair.

Photograph: Cape Times

Prof. Norman Capon

Professor Capon spoke on *Diseases of the Newly Born*.

On 9 January, Professor and Mrs. Capon were the guests of honour at a cocktail party given by Dr. and Mrs. Wolf Rabkin of Cape Town.

* * * *

Dr. G. van R. Mostert, of Pretoria, has been appointed Inspector of Interns. Dr. Mostert was previously on the staff of the Medical Faculty of the University of Pretoria as Senior Lecturer in the Department of Obstetrics and Gynaecology. He has also had many years of experience in general practice.

* * * *

Owing to heavy pressure of work, Professor S. F. Oosthuizen has resigned as Chairman of the Radiological Society of South Africa. Dr. Maurice Weinbren has been elected as Chairman by the Council for the unexpired portion of Professor Oosthuizen's period of office, i.e. for the year 1952.

1952 SOUTH AFRICAN MEDICAL CONGRESS

Arrangements for the next Medical Congress are now well in hand. It will be held at the University of the Witwatersrand, Johannesburg, during the period 22–27 September 1952.

The Organizing Committee is as follows:

Chairman: Dr. R. Geerling.
Vice-Chairmen: Dr. A. Cox; Dr. B. G. Melle.
Organizing Secretary: Dr. J. Gluckman.
Assistant Organizing Secretary: Dr. C. Theron.
Medical Secretary: Mr. W. Girdwood.
Assistant Medical Secretary: Mr. P. Theron.
Treasurer: Mr. R. Krynauw.

Dr. H. R. Raikes (*Representative of the University of the Witwatersrand*).

Dr. L. Slutzkin (*Representative of the Medical Graduates Association*).

One representative of the Students' Medical Council.

Dr. R. Baranov, Dr. L. I. Braun, Dr. J. Black, Prof. J. Gillman, Dr. C. A. H. Green, Dr. S. Heymann, Dr. V. McPherson, Dr. H. Moross, Dr. T. Schneider, Dr. M. Shapiro, Prof. W. E. Underwood, Dr. L. O. Vercueil, Dr. L. S. Williams, and Mr. J. Wolfowitz.

The first Circular and the Intention Cards will be sent out shortly.

In view of the proximity of the Jewish holidays (both before and after the dates of Congress) arrangements can be made for Jewish members who may wish to celebrate the holidays in Johannesburg.

All inquiries should be addressed to the Honorary Organizing Secretary, Dr. J. Gluckman, c/o Medical House, 5 Esselen Street, Johannesburg.

TRANSVAAL GOLFING SOCIETY OF THE MEDICAL ASSOCIATION

ANNUAL MACCAUVLEI WEEK-END

Entries are invited from members of the Medical Association to compete for the Roger Cup and President's Cup on Saturday afternoon, 22 March, and Sunday morning, 23 March, respectively. Wives of members are welcome, and competitions will be held simultaneously for them. Accommodation for the week-end can be reserved through Dr. M. K. Tucker, or through the Secretary of Maccauvlei Golf Club.

A dance will be held on Saturday night.

Entries must reach Dr. M. K. Tucker, 81 Pasteur Chambers, Jeppe Street, Johannesburg, by mid-day on Saturday, 8 March 1952: Telephone: 23-8133.

CONGRESS PAPERS: CLOSING DATE EXTENDED

The closing date for the submission of synopses of papers to be read at Congress has been extended from 3 to 23 March 1952. Synopses should not exceed 200 words.

* * * *

We deeply regret to record the death of Dr. J. J. Levin. The late Dr. Levin's wishes were that his friends should not send flowers but should instead make donations to the Benevolent Fund. Obituary appreciation notices will be published in the near future.

MEDICAL FILMS

LA PRESSE MÉDICALE'S PRIZE FOR A MEDICO-SURGICAL CINEFILM

A prize of 100,000 francs—with the possibility of its being divided—and several other prizes are offered by *La Presse Médicale* as awards for the best films of medico-surgical teaching.

Candidates should apply to the Secrétariat de la Presse Médicale, Librairie Masson, 120 Boulevard Saint-Germain, Paris (6e), before 16 March 1952.

The prize can be rewarded only to amateur films unpublished, not subsidized and not produced by any laboratory or firm.

The Jury will consider the didactic value of the film as well as its cinegraphic quality. No restriction is placed on the quality of the film, whether sound, silent, colour or black-and-white; but only the 16 mm. size will be eligible.

The prize will be delivered at the end of the exhibition of the films, during the last meeting of *Cours d'Actualités Médico-Chirurgicales*, in the large theatre of the Faculté de Médecine de Paris, on Friday, 4 April 1952, from 8.30–11 p.m.

THE FUNCTIONS OF THE CAROTID SINUS AND THE AORTIC NERVE

A NEW FILM *

Made in collaboration with the Department of Physiology, University College, London, this film is in two parts each complete in itself (Part I: Pressoreceptors; Part II: Chemoreceptors).

Part I—Pressoreceptors (Cat. No. M.26. Running time: 38 mins. 16 mm. Colour). This film begins with Czermak's observations in 1866 and passes on to the effects on blood pressure of clamping the carotid arteries with and without section of the depressor or aortic nerves.

The anatomy and histology of the carotid sinus is then demonstrated on the living animal and by diagram. This is followed by a similar series of demonstrations showing the anatomy of the aortic arch, the carotid sinus nerve and its embryological development, the aortic nerve and the histology of the carotid sinus nerve.

Stimulation of the Aortic Nerve. The effect on the blood pressure and heart of stimulation of the rabbit aortic nerve is shown. This is repeated after cutting the vagi thereby producing a fall in blood pressure which is not accompanied by any appreciable slowing of the heart. The fall in blood pressure on stimulation of the aortic nerve is also shown in the cat.

Stimulation of the Carotid Sinus Nerve. Comparable results in the cat are shown following stimulation of the carotid sinus nerve. Elimination of the effect on the heart rate after double vagotomy is also demonstrated.

Perfusion of the Isolated Carotid Sinus Preparation. The experimental set-up and the perfusion equipment together with its oxygenator is demonstrated.

The dramatic fall in arterial pressure and the slowing of the heart rate resulting from a rise in the perfusion pressure of the carotid sinus preparation in the dog is then shown. This is followed by a further demonstration to show that the carotid sinus reflex mechanism does not come into operation until a certain threshold pressure has been reached.

The film concludes with a diagrammatic re-interpretation of Czermak's classical experiment and a diagram summarizing the relationship between receptors, centres and peripheral effector organs.

Part II—Chemoreceptors (Cat. No. M.27. Running time: 33 mins. 16 mm. Colour). After a short historical introduction the anatomy of the carotid body is demonstrated in the dog. The histology of the carotid body and the anatomy of the aortic body is demonstrated by means of diagrams. A series of simple demonstrations of the functions of the chemoreceptors is then presented.

Effects of Excess Carbon Dioxide. The experimental arrangements enabling different gas mixtures to be administered to a cat are shown. The effects of breathing 3%, 6% and 9% carbon dioxide in air before and after denervation of the chemoreceptor areas are then presented to show that the carbon dioxide tension in the blood stimulated the respiratory centre reflexly via the chemoreceptors and by a direct action on the respiratory centre.

Effects of Changes in Hydrogen-Ion Concentration. These effects are shown by an intra-arterial injection of lactic acid.

Effects of Oxygen Lack. The demonstration shows that a mild degree of oxygen lack produces a slight but persistent respiratory stimulation, while an intensification of the oxygen lack shows a more vigorous respiratory response. The same experiments are repeated after denervation of the chemoreceptor areas, thereby demonstrating that after chemoreceptor denervation oxygen lack only produces respiratory failure without any preceding phase of respiratory stimulation.

Effects of Cyanide Injection. Cyanide affects the respiratory mechanism in a similar way as oxygen lack. This is demonstrated before and after chemoreceptor denervation. The stimulation of respiration following lobeline and acetyl choline injection is also shown. The abolition of this response by denervation of the aortic and carotid chemoreceptors is demonstrated in each case.

Electrical Stimulation of the Carotid Chemoreceptors. The effects are demonstrated on the cat under Chloralose anaesthesia.

Chemical Stimulation of the Aortic Body Chemoreceptors. The functional localization of the aortic chemoreceptors is shown by the injection of Lobeline through a cannula introduced below the level of the aortic valves.

The film concludes with an animated diagram recapitulating the main conclusions which can be drawn from the demonstrations presented.

* This film has recently been added to the I.C.I. Film Library. Applications to borrow the film should be made in writing to I.C.I. South Africa (Pharmaceuticals) Limited, P.O. Box 7796, Johannesburg.

REVIEWS OF BOOKS

MEDICAL DISORDERS DURING PREGNANCY

Medical Disorders During Pregnancy. Edited by Stanley Clayton, M.D., M.S. (Lond.), F.R.C.S., F.R.C.O.G. and Samuel Oram, M.D. (Lond.), F.R.C.P. (Pp. 341 + ix, with 28 illustrations. 25s.) London: J. & A. Churchill Limited. 1951.

Contents: 1. Maternal Physiology During Pregnancy. 2. The Heart in Pregnancy. 3. Albuminuria and Hypertension in Pregnancy. 4. Respiratory Diseases in Pregnancy. 5. Blood Disorders During Pregnancy. 6. Alimentary Disorders in Pregnancy. 7. Diabetes and Other Endocrine Disorders in Pregnancy. 8. Neurological Disorders in Pregnancy. 9. Psychiatric Aspects of Pregnancy. 10. Acute Specific Infective Diseases in Pregnancy. 11. Syphilis and Diseases of the Skin in Pregnancy. Index.

This book is the first of its kind to be published, being concerned only with 'medical' diseases complicating pregnancy. The editors and the contributors—each section is written by the appropriate specialist—are all on the staff of King's College Hospital, London.

S. G. Clayton, the only contributor who is an obstetrician, introduces the book by a chapter on the *Physiology of Pregnancy*. Thereafter sections are written on practically every medical disease that can complicate pregnancy: acute specific infective fevers, diseases of the skin, heart, chest, alimentary tract, nervous system, urinary tract, blood, endocrine glands, and venereal diseases, and psychiatric disorders.

The idea is a good one—to produce a volume on the medical disorders that complicate pregnancy, each disorder being written by a physician with special experience of it. But the result is not a very successful one. Each chapter is merely a review and there is little more than can be found in a book such as *Antenatal and Postnatal Care* by Browne, or *Principles and Practice of Obstetrics* by De Lee and Greenhill; only a complete book on one particular disorder could improve on one of the above books. Some sections are particularly skimpy, e.g. those on *Post-Partum Necrosis of the Pituitary Gland* and *Jaundice in Pregnancy*.

The book is useful and interesting in that it gives the obstetrician a review of some of the physician's modern views on medical diseases in pregnancy. Most of the subject matter is of a high standard; and particular mention must be made of the comprehensive and interesting sections on the *Psychiatric Aspects of Pregnancy*—this section is not emulated in any of the current obstetric textbooks.

OBSTETRICS AND GYNAECOLOGY

Medical Treatment in Obstetrics and Gynaecology. By C. Frederic Fluhmann, B.A., M.D., C.M. (Pp. 157 + ix, with 27 figures. 24s.) London: Baillière, Tindall and Cox; Baltimore: Williams and Wilkins Company. 1951.

Contents: 1. *Diagnosis and Medical Therapy in Obstetrics and Gynaecology.* A. Obstetrics. B. Gynaecology.
2. *Therapeutic Measures.* A. Useful Drugs. B. Sulfonamides and Antibiotics. C. Hormones of Reproduction. D. Vaginal Douches.
3. *Nutrition.* A. Diets. B. Vitamins.
4. *Office and Hospital Procedures.* A. Some Routine Hospital Procedures. B. Some Office and Diagnostic Procedures. Index.

This comprehensive book of 157 pages should be within easy

reach of anyone practising gynaecology. It should be within still easier reach of the general practitioner any distance removed from the aid of a gynaecologist.

One of the great advantages of this book is that no attempt is made by the author to force anyone to sit down and read it. It is a reference book arranged in alphabetical order, e.g. under *obstetrics* the order is as follows:—

Abortions, after pains, breasts, coccygodynia, cramps, etc.

If any treatment, therefore, wants to be referred to, e.g. cervicitis, the treatment is tabulated and there is no need for further search.

As is natural, there may be adequate reason for not agreeing fully with some of the treatments prescribed. These matters are ever controversial (e.g. metropathia haemorrhagica and the use of androgens) where the treatment is much in the balance.

It must again be emphasized that this book is a valuable adjunct to anyone actively engaged in midwifery and gynaecology, especially in practices where the time factor required for adequate reading is at a premium.

VARICOSE VEINS

The Treatment of Varicose Veins and their Complications. By Stanley Rivlin, Hunterian Gold Medallist, 1950. (Pp. 56 + viii, with figures and plates. 10s. 6d.) London: William Heinemann, Medical Books Limited. 1951.

Contents: 1. History. 2. Definition. 3. Aetiology. 4. Anatomy 5. Classification. 6. Symptoms. 7. Examination. 8. Physical Signs. 9. Principles of Treatment. 10. Injection Treatment. 11. Complications of Injections. 12. Retrograde Injection. 13. Details of Treatment 14. Juxtafemoral Ligation. 15. The Elastic Stocking. 16. Varicose Ulcers. 17. Elastoplast Treatment. 18. Complications of Elastoplast Treatment. 19. Deformity of the Foot. 20. Eczema. 21. Phlebitis 22. Haemorrhage. 23. Index.

This little book is well written, neatly produced and its illustrations are good. Despite this, however, and despite the stressing of a few points worthy of notice, such as the correct placing of ligations and the correct technique of injection, it is, on the whole, disappointing as the subject is inadequately dealt with. The place of superficial varicosities in the broader problem of what may be called 'lower-limb, venous-stasis syndrome' is not defined—a serious omission, because this is a crucial concept. Recent work on deep vein incompetence and its treatment is not mentioned.

The anatomy and physiology of the veins draining the leg, the etiology and pathology of disturbed venous return is skimped and that unjustifiably in a book of this nature, if a correct perspective of treatment is to be obtained. The use of venous pressure studies and venography is omitted. Those methods of examination and treatment that the writer does deal with are not considered in sufficient detail. Finally, there are no follow-up studies.

The book does not provide sufficient information for the surgeon, and for the student and practitioner the perspective is wrong.

PHYSIOLOGICAL CHEMISTRY

Review of Physiological Chemistry. By Harold A. Harper, Ph.D. Third edition. (Pp. 260, with illustrations. $3.50) California: University Medical Publishers. 1951.

Contents: 1. General and Physical Chemistry. 2. Carbohydrates. 3. Lipids. 4. Proteins. 5. Nucleoproteins and Nucleic Acids. 6. Vitamins. 7. Enzymes. 8. Biological Oxidation. 9. The Blood, Lymph, and Cerebrospinal Fluid. 10. The Chemistry of Respiration. 11. Digestion and Absorption From the Gastro-Intestinal Tract. 12. Detoxication. 13. The Metabolism of Carbohydrate. 14. The Metabolism of Fat. 15. Protein and Amino-Acid Metabolism. 16. The Functions and Tests of the Liver. 17. The Kidney and the Urine. 18. Water and Mineral Metabolism. 19. The Chemical Structure and Functions of the Hormones. 20. Calorimetry: Elements of Nutrition. 21. The Chemistry of the Tissues. Illustrations. Charts. Tables. Index.

This book is intended to be a supplement to the standard textbooks of biochemistry and to provide a reliable and up-to-date review of the established facts of physiological chemistry, for students and others to brush up their knowledge. The book therefore serves a purpose similar to that of the familiar *Aids* series; but in accordance with the more advanced knowledge of biochemistry expected of medical students in America, it goes into greater detail and pays greater attention to the theoretical side.

The illustrations are striking and informative. A good index is provided, but it would be better if the main discussion of a subject could be printed in bold type, for at present it is often hidden in a series of page numbers referring to isolated facts of small importance. No references are given. References would add greatly to the value of the book. It would indeed be a colossal task to provide them for all facts described, but something might perhaps be done to guide the student to the source of recent advances.

The book has a thin board cover and loose-leaf binding. It is therefore happier on the desk than in the hand, in the pocket or on the bookshelf.

THE STOMACH AND THE DUODENUM

Surgery of the Stomach and Duodenum. By Claude E. Welch, M.D. (Pp. 349, with 79 plates. $8.50.) Chicago: The Year Book Publishers, Inc. 1951.

Contents: 1. Anatomy of Stomach and Duodenum. 2. Pre- and Post-operative Treatment. 3. Anesthesia. 4. Special Instruments. 5. Incisions and Closure. 6. Congenital Abnormalities. 7. Perforating Wounds. 8. Gastrotomy and Duodenotomy. 9. Gastrostomy. 10. Diverticula of the Stomach and Duodenum. 11. Hiatus Hernia. 12. Pyloroplasty and Cardioplasty. 13. Side-to-Side Anastomoses. 14. Duodenal and Gastric Ulcer. 15. Other Operations for Complications of Ulcer. 16. Gastric Cancer. 17. Tumours of the Duodenum. 18. Complications of Gastric Resection. 19. Late Complications of Gastric Operations. 20. Anastomosis with Special Clamps. 21. Duodenal Fistula. Appendix 1. Appendix 2. Bibliography. Index.

Subject to certain adverse criticisms, this book should be very useful to senior students and house surgeons preparing to assist at, and to senior house surgeons preparing to perform major gastric or duodenal operations. Unfortunately for such persons the price is high for the coverage of so limited a field.

The advice given on all subjects is sound, and the drawings are clear, explicit and well chosen.

The limited size of the book is unfortunately emphasized by needless repetition of drawings of closure of duodenal stump, gastrotomy and duodenotomy for various—usually rare—reasons, and gastroduodenostomy. Too many varieties of gastrostomy are illustrated. Resection of these would have permitted a more effective discussion or more adequate illustration of at least the following items: The approach to gastric resection for duodenal ulcer, and for bleeding ulcer, gastric or duodenal; the limitations of gastroenterostomy for ulcer; and the treatment of gastrojejunocolic fistula.

In any book planned as a 'practical guide to the younger surgeon' such changes would be beneficial, and would make the book more enjoyable to the older surgeon. In these circumstances, too, description of a one-stage procedure for gastrojejunocolic fistula is out of place.

There is an excellent bibliography.

MEDICINE 1951

The 1951 Year Book of Medicine (May 1950–May 1951). Edited by Paul B. Beeson, M.D., J. Burns Amberson, M.D., William B. Castle, M.D., S.M. (Hon., Yale), M.D. (Hon., Utrecht), Tinsley R. Harrison, M.D. and George B. Eusterman, M.D. (Pp. 696, with 149 figures. $5.00.) The Year Book Publishers, Inc. 1951.

Contents: 1. Infections. 2. The Chest. 3. The Blood and Blood-forming Organs. 4. The Heart and Blood Vessels and the Kidney 5. The Digestive System. Index.

Every year sees the publication of more medical journals on all the specialities from almost every country in the world. It is simply impossible for anyone to try to keep pace with this enormous growth. The publication of extracts, as in the *Year Books*, is certainly one of the answers, and allows a rapid scanning of important articles published during the year. *The 1951 Year Book of Medicine* covers infections, respiratory diseases and diseases of the blood, heart and vascular systems, and the digestive system, from May 1950 to May 1951. Each section of articles is summarized by reputable authorities in these fields. It would be invidious to choose any particular section as being better than another, and unnecessary to discuss any particular article. There are quite a few abstracts of articles by South African authors that have appeared in various medical journals.

These *Year Books* have now been appearing a sufficient

number of years to be appreciated by the medical profession. The summaries are pithy and concise, and the book is a worthy addition to any library. The fact that articles up to May 1951 are included, certainly makes this the most up-to-date publication of its kind. The book is recommended without reservation.

PATTERNS OF MARRIAGE

Patterns of Marriage: A Study of Marriage Relationships in the Urban Working Classes. By Eliot Slater, M.A., M.D., F.R.C.P. and Moya Woodside. (Pp. 311. 17s. 6d.) London: Cassell & Company, Limited. 1951.

Contents: 1. Introduction. 2. Family Background. 3. Childhood. 4. Education. 5. Occupations. 6. Sports, Hobbies and Sociability. 7. Courtship. 8. Reasons for Marrying. 9. Assortative Mating. 10. Happiness and Harmony in Marriage. 11. Sex Life in Marriage. 12. Determining Factors in Procreation. 13. Contraception. 14. The Effects of War on Marriage. 15. The Neurotic in Marriage. 16. Adult Health of Women. 17. Politics, Religion, Values. Summary and Conclusions. Tables of Statistics. Appendices. Bibliography. Case Index. Index.

The authors have studied 200 married servicemen and their wives. Half the men were patients admitted to hospital for treatment of neurosis and the other half for general medical and surgical care. The latter group constitutes the control series of the study. The homes of both groups were in London.

The social implications of neurosis are indicated by several significant differences found to exist between the neurotic and the control groups. It would appear that husbands and wives tend to resemble each other, there being a higher incidence of neurosis in the wives of neurotic men than in those of the control group. A history of unhappy relations between the parents of the neurotic group was more common and their own marriages were less satisfactory than in those of the control. A well-adjusted relationship between parents is an important prognostic indication of the healthy development of children as evidenced by their findings in respect of expectation of happiness in childhood, which is profoundly influenced by the emotional state of the parents, more especially that of the mother.

The effects of ill health in childhood on later life is well demonstrated. Neurotic traits in childhood, which were found to be associated with physical ill health, were three times more common in the history of the neurotic group than in the control series.

The findings stimulate the authors to occasional brief excursions into the field of preventive psychiatry, marriage guidance and club activities. To the reviewer it would seem that Dr. Slater and his colleague Miss Woodside have provided further evidence of the need for a comprehensive family service. In so doing they have produced a text which will be of considerable interest to the student of social medicine and the practitioner concerned with family health and medical care.

ALCOHOLISM

Expert Committee on Mental Health. Report on the First Session of the Alcoholism Subcommittee. World Health Organization Technical Report Series No. 42. (Pp. 24. 1s. 3d.) Geneva, Switzerland: World Health Organization. Pretoria: Van Schaik's Bookstore (Pty.) Limited. 1951.

The report on the first session of the Alcoholism Subcommittee of the Expert Committee on Mental Health has now been published as No. 42 in the *World Health Organization: Technical Report Series.*

Alcoholism is no longer considered solely as a moral and legal problem. As the report states, 'scientific knowledge on alcoholism now exists which enables a serious attempt at the medical prevention of alcoholism and the successful early treatment of individuals suffering from this disorder to be started'.

The approach to treatment must be through 'diagnosis of internal and external factors which appear to have provoked the problem and the handling of it both by the methods of psychotherapy and the methods of social work'.

The recognizable stages in the development of alcoholism—symptomatic drinking, addictive drinking, organic disease or psychic deterioration—are considered. It is emphasized in the report that cases should be treated in the earliest stages, when good therapeutic results may be expected. For this purpose out-patient dispensary services are necessary. These can be conveniently attached to general hospitals, in order to make use of existing facilities, and to influence the staff about the correct approach to the problem.

Important pharmacological developments in recent years, in particular the production of the drug tetraethylthiuram-disulfide, commonly known as Antabus, are proving valuable as an aid in the treatment of certain well-chosen cases. In more advanced cases various forms of 'aversion' therapy (employing apomorphine or emetine) may be indicated. Recent advances in endocrinology have suggested that adrenocorticotropic hormone and cortisone may prove valuable aids in the handling of acute cases showing delirium tremens, acute alcoholic intoxication, or even Korsakoff psychosis.

The extent of the problem in most countries is not known. Tentative estimates of numbers of alcoholics for certain countries are annexed, and an estimation formula for the number of alcoholics with complications, obtained from other available statistics, is given for the U.S.A. and may prove useful for other countries. It is stressed that statistical information must be collected as part of any widespread public health programmes for the rehabilitation of the alcoholic.

MUIR'S PATHOLOGY

Muir's *Textbook of Pathology.* Sixth Edition Revised by D. F. Cappell, M.D., F.R.F.P.S.G. (Pp. 1090 + xx, with 636 illustrations. 50s.) London: Edward Arnold & Co. 1951.

Contents: Introduction. 1. Disturbances of the Circulation. 2. Inflammation. 3. Inflammation (continued): Repair and Hypertrophy. 4. Disturbances of Nutrition. 5. Infection, Fever, Immunity. 6. Tumours. 7. Tumours (continued). 8. Circulatory System: The Vessels. 9. Circulatory System: The Heart. 10. Respiratory System. 11. Haemopoetic System. 12. Haemopoietic System: The Blood. 13. Alimentary System: The Spleen, Lymph Nodes, Bone-Marrow. 14. Alimentary System: The Oesophagus, Stomach, Intestines. 15. Nervous System. 16. Urinary System. 17. Locomotor System. 18. Reproductive System. 19. Endocrine Glands. Bibliography. Index.

It is a great pleasure to welcome the sixth edition of this standard textbook of pathology, which has been at the elbow of so many generations of medical students.

The new edition has been revised by Professor Cappell who rightly considers that 'dogma is of less value to the student than the training of his critical faculties'. For this reason he has not hesitated to put both sides of an argument when there is doubt about the meaning of observation or experiment.

While, from the student's point of view, it is unfortunate that special subjects such as parasitology must now be excluded from the compass of this volume, it is quite understandable that some limit must be placed upon what can reasonably fall between the covers of a textbook of pathology designed for the undergraduate student.

The 'bibliography for further reading' gives an excellent opportunity for those who wish to pursue special subjects in greater detail to do so through the medium of a very well-selected set of references.

CORRESPONDENCE

PSYCHO-SOMATICS OF CANCER

To the Editor: After reading the fierce, if not rude, attack on Dr. Freed by Mrs. Annabelle Cohen (this *Journal*, 29 December 1951) I feel I must express my sympathy with Dr. Freed. I found none of the unscientific, categoric statements that her letter would lead one to expect. Cancer research has not had such brilliant success, so far as to justify such an attack. If cancer has not been a bacteriological question since 1900, might not Dr. Freed's theory be an alternative explanation of the frequency with which we G.P.'s often find cancer in husband and wife?

C. Lundie.

49 Anstey's Buildings,
West Street,
Durban.
11 January 1952.

Instructions to Authors

All authors are advised to consult *Medical Writing*, by Dr. M. Fishbein, formerly Editor of the *Journal of the American Medical Association*. The volume is obtainable from medical libraries in South Africa. It is published by the Blakiston Co., Philadelphia, U.S.A.

Papers submitted for publication in this *Journal* are accepted on condition that they have not been published elsewhere. The *Journal* Management reserves the copyright of all material published.

Considerable delay in the publication of papers is often due to the fact that they are poorly prepared. Publication will be expedited if the following specifications are complied with:—

1. All copy should be typewritten (double or preferably triple spaced) with wide margins.

2. Tables, references, graphs, illustrations and legends for illustrations should be clearly identified and *prepared on separate sheets*.

3. All photographs should be glossy prints unmounted, untrimmed and unmarked. Authors' suggestions for trimming, etc., are most suitably indicated on a duplicate print or diagram.

4. In no circumstances should original X-ray films be forwarded. Glossy prints must be submitted.

5. Line drawings should be on white board, arranged to conserve vertical space. All lettering in diagrams and graphs should be indicated clearly in soft lead pencil, preferably on a duplicate specimen or diagram in rough. In no circumstances should lettering be inked in or typewritten on the figure or the graph. Illustrations should not exceed 12 inches × 18 inches in size.

6. Figure numbers should be marked clearly on the back of each illustration, and in every case the top of the illustration should be indicated.

7. A limited but reasonable amount of illustrative and tabular matter is allowed free. Additional material of this sort may be allowed at cost, at the discretion of the Editor.

8. All references to the literature should be inserted in the text as a superior number and listed at the end of the article in numerical order.

9. References must conform to the following convention (journal titles being abbreviated according to the *World List of Scientific Periodicals*):—

White, J. and Brown, A. B. (1946): Arch. Clin. Med., **123**, 167.

Books should be cited as follows:—

Smith, J. (1946): *An Introduction to Medicine*, 2nd ed., p. 174. Cape Town: John Black, Ltd.

10. All numerals to be printed as figures (i.e. *not* spelt out). *For 'one' or 'I' always follow copy.* All numerals *always* to be spelt out in full at the beginning of a sentence.

All numerals *always* to be spelt out in full at the beginning of a sentence.

11. Cubic centimetre *as* c.c.; Cubic millimetre *as* c.mm.; 7.11.46 *as* 7 November 1946; 2nd *as* second; 10/6 *as* 10s. 6d.; Per cent. *as* %; 1" *as* 1 inch; B.P. 140/80 *as* Blood pressure, 140/80 mm. Hg.

12. Each paper should conclude with a summary (of about 200 words) intelligible apart from reference to the main text of the article.

13*a*. Galley proofs will be forwarded to the author in good time before publication date.

13*b*. Corrections, other than typographical errors, will be charged to the author. It is therefore most important that the MS. be submitted in its *final form*.

14. *Reprints:* An order blank for reprints, together with a price list, will be sent to the author as soon as his article reaches page-proof stage.

15. All manuscripts and correspondence should be addressed to:—The Editor, *The South African Medical Journal*, P.O. Box 643, Cape Town.

The Medical Association of South Africa
Die Mediese Vereniging van Suid-Afrika

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PRAKTYKE TE KOOP : PRACTICES FOR SALE

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(Pr/S35) Eastern Transvaal. Dispensing practice. Annual gross income, £3,500. House for sale at £3,000. Large bond available. Premium £1,750. Terms open for discussion.
(Pr/S36) North-western O.F.S. Unopposed dispensing practice. Total gross receipts £3,000. £500 rebate if appointment not transferred. Premium required £1,200, including drugs and surgery furniture. Terms can be arranged.
(Pr/S37) E. Transvaal. Dispensing practice. One appointment held. House to let at £10 p.m. Average annual gross receipts, £2,250. Premium required £400, inclusive of drugs and instruments. Terms can be arranged.

MEDICAL EQUIPMENT

(I/O19) Zeiss microscope. Condition as new. £55.
(I/O23) Heavy based Irrigator stand, height adjustable, complete with glass flask and hook to carry vacolitre flasks. £7.
(I/O24) Bausch & Lomb microscope. Condition as new. Oil, high and low power lenses. Two eye-pieces. £60.
(I/O26) B.G.E. 'Hanovia' Ultraviolet lamp. Good condition, £25.
(I/O28) Instomatic Cardiette in excellent condition, with universal lead selector attachment. Price £180.

ASSISTENTE/PLAASVERVANGERS VERLANG
ASSISTANTS/LOCUMS REQUIRED

(L/V185) Assistant from 1 March 1952 for six months. Hospital town 34 miles from Johannesburg. Terms: £2 10s. p.d. all found and car allowance.
(L/V151) Gentile locum for month of March. Terms £2 12s. 6d. p.d. all found and car allowance. 60 miles from Johannesburg.
(L/V186) Natal. For month of April. £2 2s. p.d. all found and car allowance.
(L/V187) O.V.S. Plaasvervanger vanaf 26 Maart tot 18 April. Salaris £2 2s. p.d., alles vry en kartoelae van £10 p.m.
(L/V190) O.F.S. Locum for two months from 15 March to 15 May 1952. Salary £2 2s. p.d., all found, free petrol and oil, plus car allowance.

VERNOOTSKAP VERLANG : PARTNERSHIP REQUIRED

(P/W29) F.R.C.S. recently done two years' G.P. work, extensive experience as General Practitioner, tropical medicine, interested in doing surgery for a G.P. firm.
(P/W30) Ophthalmic Surgeon desires to acquire practice or partnership.

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(A/W57) Lady doctor, additional experience Anaesthetics and Pediatrics, requires assistantship as from 1 March 1952.

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(R/O1) Johannesburg Central. Furnished consulting rooms with services of receptionist, from 1 March 1952, for a period of 10 months to one year.
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(956) Cape Town Northern Suburb. Assistant required for general practice from 1 April for 12 months. Accommodation available for married doctor.
(960) Eastern Province hospital town. As soon as possible, an assistant with view to partnership. Car essential but would not normally be required for practice. Single man preferred but not essential. Remuneration to be arranged.
(962) Western Province hospital town. For approximately 3 months from May. Salary £2 11s. 6d. p.d. plus board and free car.
(965) S.W.-Kaapland. Assistent so spoedig moontlik met oog tot vennootskap. Aanvangsalaris £70 p.m. plus losies en kartoelae as eie kar gebruik word.

* * * *

DURBAN

112 Medical Centre, Field Street. Telephone 24049

LOCUM REQUIRED

(DL2) From 8 May to 31 May. Single male preferred. Locum must possess his own car and be prepared to live in principal's flat at Wentworth. General practice with consulting rooms in Durban.
(DL3) For month of July. Terms to be discussed with locum. House available and all found. If locum provides own car an allowance of £10 will be made plus running expenses. Bilingual male preferred. General practice, with consulting rooms at Clairwood.

Department of Health

VACANCIES FOR VISITING MEDICAL OFFICER (PART-TIME) AND PSYCHIATRIST (PART-TIME): KING GEORGE V HOSPITAL, DURBAN

Applications are invited from suitably qualified candidates for appointment to the undermentioned posts which exist on the staff of the King George V Hospital, Durban:

Post	*Honorarium attaching to Post*
(a) Anaesthetist	£600 per annum (fixed).
(b) Psychiatrist	£600 per annum (fixed).

Candidates must be South African citizens, or citizens of a Commonwealth country or citizens of the Republic of Ireland, be bilingual and have resided in the Union of South Africa or in South West Africa for at least three years.

Registration with the South African Medical and Dental Council as a specialist in the particular speciality is an essential requirement for appointment to any of the posts.

The appointees will be expected to co-operate in any research work connected with their specialities and to attend staff consultations when possible.

Further information in regard to these proposed appointments can be obtained from the Medical Superintendent of the hospital in question.

Application must be made on the prescribed forms (Z.83 and P.S.C.8) which are obtainable from the Secretary for Health, P.O. Box 386, Pretoria.

The closing date for receipt of applications will be 15 March 1952. 33796

Provincial Administration of the Cape of Good Hope

HOSPITALS DEPARTMENT

Applications are invited from registered medical practitioners for the post of Honorary Surgeon at the Cape Town Free Dispensary.

The appointment will be for five years, but may be terminated before the end of that period if and when the medical staffing of the hospitals is reorganized.

Applications containing particulars of age, qualifications, experience, etc., with copies of recent testimonials should be forwarded to the undersigned not later than noon on Saturday, 1 March 1952.

I. P. Walton
Acting Branch Representative
(27013)

Hospitals Department
Industry Building
58 Loop Street
Cape Town

Services Offered

Doctor and wife (trained nurse) proceeding United Kingdom between April and June 1952, willing to look after invalid on voyage. For further particulars write to 'A. K. J.', P.O. Box 643, Cape Town.

Wanted

Ophthalmic surgeon (44) having extensive clinical and operative experience, seeks partnership or succession, preferably in coastal town. Write to 'A. K. V.', P.O. Box 643, Cape Town.

Locum Wanted

At Tsumeb Mine Hospital, South West Africa, for the period 2 May to 4 June 1952. Remuneration three guineas per day all found. Return air fare to Windhoek and air or bus fare from Windhoek to Tsumeb will be refunded. Apply Senior Medical Officer, Tsumeb Hospital, Tsumeb, South West Africa.

Department of Health

VACANCY FOR MEDICAL OFFICER (NUTRITION): INSTITUTE OF FAMILY AND COMMUNITY HEALTH, DURBAN

Applications are invited for appointment to the above-mentioned post which is in the Health Centre Service of the Union Health Department.

The successful applicant will be expected to participate in the training of various categories of staff and in investigations being carried out at the Institute, as well as in the service provided by the health centres associated with the Institute.

Appointment to this post will, in the first instance, be on a contract basis for a period of two years on the salary scale £720 × 30—£900 × 40—£1,020.

The successful candidate will receive recognition for previous experience as a medical practitioner, and the commencing salary will be determined on the basis of one notch on the abovementioned scale for every completed year of such experience and also one notch in cases where candidates are in possession of the Diploma in Public Health or the Diploma in Tropical Medicine and Hygiene (the year spent in study for a Diploma is not reckoned as a year of experience as a medical practitioner), on the condition that the maximum commencing salary shall not exceed £900 per annum. Candidates are required to produce written evidence of previous experience.

In addition to the salary indicated a cost-of-living allowance will be paid at the rate applicable to officials in the Public Service, which at present amounts to £256 per annum in the case of married officials and to £80 per annum in the case of single officials.

Candidates must—

(a) be registered with the South African Medical and Dental Council as medical practitioners;

(b) be South African citizens or citizens of a Commonwealth country or citizens of the Republic of Ireland;

(c) be bilingual; and

(d) have resided in the Union of South Africa or in South West Africa for a period of at least three years.

The successful candidate will not be permitted to practice privately and will be required to submit satisfactory certificates of birth and health.

Applications, which should be accompanied by copies of testimonials, must be submitted in duplicate on the prescribed forms (Z.83 and P.S.C.8) which are procurable from the Secretary for Health, P.O. Box 386, Pretoria, and must reach the office of the abovenamed on or before 15 March 1952.

(33743)

The Transvaal Society of Accountants Medical Aid Fund

Applications are invited for the appointment as Medical Adviser to the above Fund.

Further particulars may be obtained from the Secretaries, P.O. Box 2995, Johannesburg.

This Fund has been approved by the Southern Transvaal Branch (M.A.S.A.). (TSA/6224)

Partnership Required

Doctor 35, qualified Edinburgh, 9 years, married, Protestant, bilingual, surgical experience. Recently returned from post-graduate study overseas. Wants partnership with preliminary trial. Excellent references. Write to 'A. K. P.', P.O. Box 643, Cape Town.

For Sale

Eastern Province solus dispensing practice near popular holiday resorts. Two appointments, almost certainly transferable. Gross income last year £2,700; for sale at £1,150, which includes drugs, surgery, furniture, etc. Write to 'A. K. R.', P.O. Box 643, Cape Town.

Natal Provincial Administration

VACANCIES: SENIOR MEDICAL OFFICERS ADDINGTON HOSPITAL

Applications are invited from registered medical practitioners for appointment to the following vacant posts of Senior Medical Officer at Addington Hospital:

1 post in the Pediatric Department.
1 post in the Out-Patients Department.
1 post in the Ear, Nose and Throat Department.
1 post in the Eye Department.
1 post in the Medical Department.
1 post in the Anaesthetics Department.

Appointment is on twelve months' contract and the salary attaching to the posts is as follows:—

Two years' service after qualification: £400 per annum plus privileges.

Three years' service after qualification: £600 per annum, plus free quarters or an allowance in lieu thereof.

Four years' service after qualification: £700 per annum, plus free quarters or an alowance in lieu thereof.

Five years' or more service after qualification: £800 per annum, plus free quarters or an allowance in lieu thereof.

In addition to the aforegoing salary, a temporary cost-of-living allowance is also payable.

Applications giving full details of experience and qualifications should be addressed to the Director, Provincial Medical and Health Services, P.O. Box 20, Pietermaritzburg, to reach him not later than 29 February 1952. AD 6783

Natalse Provinsiale Administrasie

VAKATURES: SENIOR MEDIESE BEAMPTE: ADDINGTON-HOSPITAAL

Aansoeke om aanstelling in ondervermelde poste by Addington-hospitaal word van geregistreerde mediese praktisyns ingewag:

Afdeling vir Kindersiektes	1 pos.
Afdeling vir Buite-pasiënte	1 pos.
Afdeling vir Oor, Neus en Keel	1 pos.
Afdeling vir Oë	1 pos.
Afdeling vir Medisyne	1 pos.
Afdeling vir Narkose	1 pos.

Aanstelling is op 12 maande kontrak, en die salarisskaal verbonde aan die poste is as volg:—

Twee jaar diens na afstudering: £400 per jaar plus voorregte.

Drie jaar diens na afstudering: £600 per jaar plus vry kwartiere of 'n toelae in plaas daarvan.

Vier jaar diens na afstudering: £700 per jaar plus vry kwartiere of 'n toelae in plaas daarvan.

Vyf jaar of meer diens na afstudering: £800 per jaar plus vry kwartiere of 'n toelae in plaas daarvan.

'n Tydelike duurtetoeslag teen heersende staatsdienstariewe is ook betaalbaar.

Aansoeke met volledige besonderhede betreffende ervaring en kwalifikasies moet gerig word aan die Direkteur van Provinsiale Mediese en Gesondheidsdienste, Posbus 20, Pietermaritzburg, sodat hulle hom voor of op 29 Februarie 1952 bereik. (AD 6783)

Assistent Benodig

Onmiddellik benodig vir 'n Pretoria praktyk, 'n assistent met die oog op 'n latere vennootskap. Applikant moet tweetalig wees. Skryf aan „A. K. W.", Posbus 643, Kaapstad.

Required

Factory requires services of a part-time medical officer. Apply to P.O. Box 1271, Cape Town.

For Sale

Instrument trolley, medicine cabinet, etc. Telephone Cape Town 2-5448 between 9 a.m. and 5.30 p.m., or write to 'A. K. L.', P.O. Box 643, Cape Town.

Provincial Administration of the Cape of Good Hope

HOSPITALS DEPARTMENT

VACANCY: MEDICAL PRACTITIONER, GRADE A: SIR HENRY ELLIOT HOSPITAL, UMTATA

Applications are invited from registered medical practitioners for appointment to the abovementioned post on the staff of the Sir Henry Elliot Hospital, Umtata, for a contract period not exceeding four years. The salary scale applicable to the post is £500—600—660—£720 per annum plus a temporary cost-of-living allowance at rates prescribed from time to time by the Administrator.

The conditions of service are the same as those prescribed in respect of corresponding posts in the Hospital Board Service in terms of the Hospital Board Service Ordinance, 1941, and the regulations framed thereunder. The appointment will be terminable at any time by the tendering of ninety days' notice on either side.

Applications must be made on the prescribed form (Staff 23) which is obtainable from the undersigned or from the offices of any Provincial Hospital or School Board in the Province. Completed application forms should be addressed to the Medical Superintendent and the closing date for receipt of applications will be noon on Friday, 29 February 1952.

Candidates must state the earliest date on which they can assume duty.

G. W. Jarmain
Branch Representative
(O 1171)

P.O. Box 202
Umtata
5 February 1952

Lyttelton Health Committee

VACANCY: PART-TIME MEDICAL OFFICER OF HEALTH

NOTICE NO. 2/52

Applications are invited, in terms of Section 62 of Ordinance No. 17 of 1939, from registered medical practitioners for appointment as part-time Medical Officer of Health to the above Local Authority.

The salary attached to the post will be £60 per annum.

Applications containing full details regarding qualifications must reach the undersigned not later than Monday, 31 March 1952.

J. H. Blignaut
Acting Secretary/Treasurer
(I/M/1)

P.O. Box 13
Lyttelton
5 February 1952

Gesondheidskomitee van Lyttelton

VAKATURE: DEELTYDSE MEDIESE GESONDHEIDSBEAMPTE

KENNISGEWING NO. 2/52

Aansoeke word ingewag ingevolge Artikel 62 van Ordonnansie Nr. 17 van 1939 van geregistreerde geneeshere vir aanstelling as deeltydse Mediese Gesondheidsbeampte vir bogenoemde plaaslike bestuur.

Die salaris aan die betrekking verbonde sal £60 per jaar wees.

Aansoeke met vermelding van kwalifikasies, ens., moet die ondergetekende nie later nie as Maandag, 31 Maart 1952, bereik.

J. H. Blignaut
Waarnemende Sekretaris/Tesourier
(I/M/1)

Posbus 13
Lyttelton
5 Februarie 1952

Provincial Administration of the Cape of Good Hope

HOSPITALS DEPARTMENT

HOSPITAL BOARD SERVICE: VACANCIES

Applications are invited for the undermentioned vacant posts in the Hospital Board Service.

The appointment of the successful candidates will be made in terms of, and be subject to, the Hospital Board Service Ordinance, 1941 (Ordinance No. 19 of 1941) and the regulations framed thereunder.

In addition to the emoluments specified hereunder, cost-of-living allowance is payable to whole-time officials and employees.

Applications should be submitted (in duplicate) on the prescribed form Staff 23, which is obtainable from the Director of Hospital Services, P.O. Box 2060, Provincial Building, Wale Street, Cape Town, or from the Branch Representative of the Hospital Department at Cape Town (P.O. Box 1487), Port Elizabeth (P.O. Box 80), East London (P.O. Box 13), Kimberley (P.O. Box 618), and Umtata (P.O. Box 202), or from the Medical Superintendent of any Provincial Hospital or Secretary of any School Board in the Cape Province.

The closing date for the receipt of applications is 8 March 1952, and applications should be addressed to the Branch Representative, Hospitals Department, P.O. Box 1487, Cape Town.

Institution	*Post*	*Emoluments*	*Additional qualifications and remarks*
Somerset Hospital	Medical Practitioner Grade 'B' (Department of Medicine).	£720×40—£960 per annum.	(27022)

Medical Propagandist Wanted

Old-established firm distributing a medical appliance requires part-time services of a Medical Propagandist in each of Johannesburg, Cape Town and Durban, on the basis of a contribution towards salary and expenses. Reply to 'A. K. Z.', P.O. Box 643, Cape Town.

Partnership Required

Young Jewish doctor, married, varied general practice experience, seeks partnership in a South African or Rhodesian city or town practice. Available immediately. Write to 'A. K. N.', P.O. Box 643, Cape Town.

For Sale

Picker portable X-ray plant 15 MA at 80 KV.
K.V and MA control. Fixer and developer tanks 3 gallons.
12 × 15, 10 × 12, 10 × 8 Casettes, screens and hangers, one each.
All equipment practically new. Suitable for general practitioner. Owner overseas. Write to 'A. K. T.', P.O. Box 643, Cape Town.

Motor Industry Sick Benefit Fund

(TRANSVAAL AND ORANGE FREE STATE)

PART-TIME MEDICAL OFFICER FOR VEREENIGING

Applications are invited from fully qualified registered general practitioners in respect of the abovementioned appointment.

The Fund operates on the closed panel system and the successful candidate will be required to provide consulting room, domiciliary and hospital service (when necessary) for members and their dependants. Further details will be furnished on request.

Applications must reach the Secretary of the Fund, P.O. Box 8477, Johannesburg, by Friday, 7 March 1952.

This appointment is approved by the Medical Association.

7 February 1952

Assistant Required

Experienced assistant required from 1 May for busy medical general practice in Northern Transvaal, including work in a hospital. Surgical experience will be a strong recommendation.

Applicant must possess his own car.

Apply, giving particulars regarding age, experience, qualifications and marital state, to 'A. K. S.', P.O. Box 643, Cape Town.

Interviews with selected candidates will be arranged during March in Johannesburg.

S.A. Medical Journal

S.A. Tydskrif vir Geneeskunde

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